

REMARKS

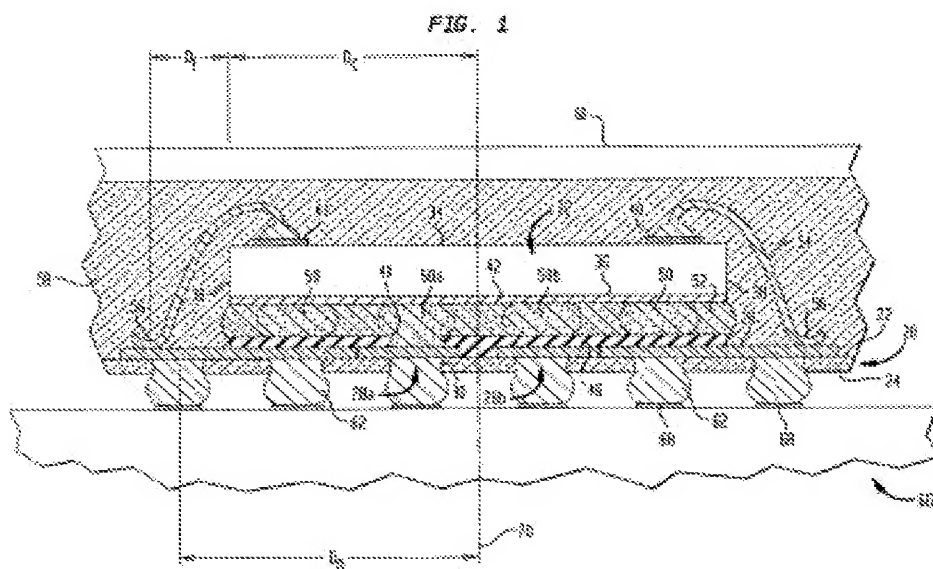
In the Final Office Action dated May 29, 2007, the Examiner rejected claims 1-16 and 37-40 under 35 U.S.C. 103 as obvious over the combination of DiStefano (U.S. Patent No. 6,127,724) and Iijima (Japanese Patent Application P2003-030767/U.S. counterpart Publication No. 2004/0155358). In response, the Applicants have amended claim 1. Claims 1-16 and 37-40 remain at issue.

THE ART REJECTION

The Examiner has rejected the claims as obvious over the combination of DiStefano and Iijima. The Applicants' strongly disagree. The Examiner has failed to demonstrate a prima facie case of obviousness.

In the ***Response to Arguments***, the Examiner dismisses the arguments for patentability made by the Applicants. With all due respect, the Applicants believe the Examiner's rational is without merit. The encapsulant 52 of DiStefano is not a molding interface material.

Prior to addressing the merits of the rejection, a review of DiStefano is first provided. For the sake of convenience, Figure 1 of the reference has been inserted below.



The packing assembly of DiStefano includes a chip 32, having a top surface 34 and a bottom surface 36. See column 6, lines 52-53. An electrically conductive potential plane 42 is formed on the bottom surface 36 of the chip 32. See column 6, lines 58-60. The package

assembly also includes a dielectric element 20 having a top surface 22 and a bottom surface 24. See column 6, lines 36-38. Metal traces 26 and a film 46 are formed on the top surface 22 of the dielectric element 20. The assembly is then encapsulated in a “lead” encapsulant 58. See column 7, lines 56-65.

The space between the chip 32 and the dielectric element 22 is filled with the encapsulant material 52. Specifically in column 7 lines 51-54, DiStefano states “*A flexible rear encapsulant 52 occupies the space between the rear surface 36 of the chip and the top surface 22 of the dielectric layer, completely filling any voids left unoccupied by the posts, insulating layer 46, and traces 26.*” DiStefano therefore explicitly teaches that material 52 is an *encapsulant* which is used as a *filler*.

In one embodiment, DiStefano states that the lead encapsulant 58 maybe made from the same composition as encapsulant 52. See column 7, lines 59-60. Alternatively, DiStefano teaches that the encapsulant 52 may be “*loaded*” with “*thermally conductive filler or may be electrically conductive*”, whereas encapsulant 58 may be “*left unloaded*”. See column 7, lines 59-64.

The material 52 of DiStefano is therefore not (i) a molding interface material. It is an encapsulant; and (ii) as an encapsulant, it does not control tensile or shear stresses experienced by the die.

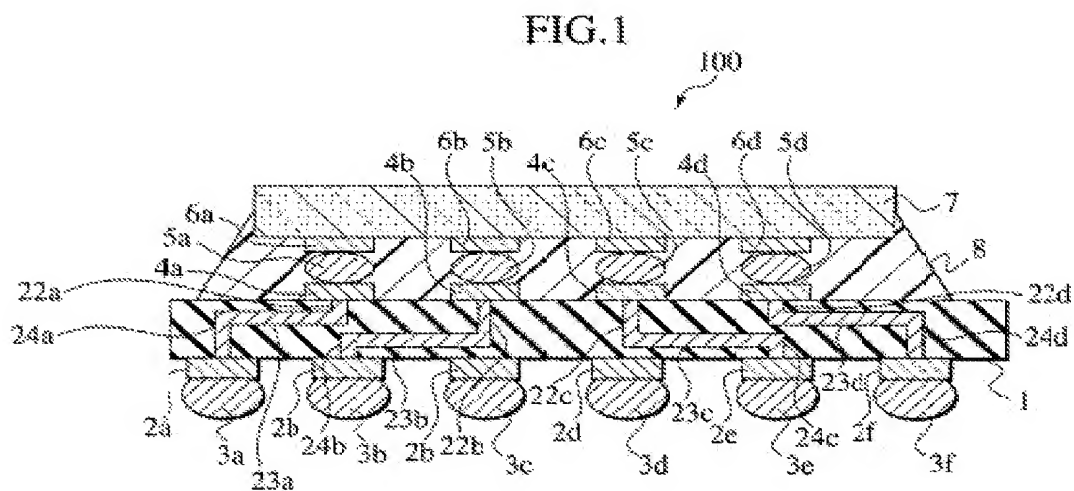
The claims of the present invention are significantly different that the DiStefano in at least one important regard. The claims call for a **molding interface material to control at least one of tensile and shear stresses experienced by the die and substantially caused by a molding cap.** In DiStefano, there is no molding interface material. On the contrary, DiStefano specifically teaches that rear encapsulant 52 is made from the *same* material as the main encapsulant 58. While DiStefano teaches that the encapsulant 52 may be “loaded” to increase its thermal and/or electrical conductivity, the loaded encapsulant material 52 is still the *same* material as encapsulant 58, other than the possible differences in thermal and/or electrical conductivity.

Since the two encapsulants 52 and 58 are substantially identical materials, they will have similar mechanical properties. Consequently, if the encapsulant 58 in DiStefano is causing the die to experience tensile and/or shear stresses, then so too will the encapsulant 52. Both will create tensile and/or shear stresses on the die.

In the rejection, the Examiner is alleging that encapsulant 52 is a molding interface material. A careful review of DiStefano clearly indicates that the Examiner conclusion is unsubstantiated. DiStefano clearly teaches that material 52 is a molding material itself, not a molding interface material. As a molding material, the encapsulant 52 can not **control at least**

one of tensile and shear stresses experienced by the die and substantially caused by a molding cap.

Figure 1 of Iijima shows a package assembly 100 including a chip 7 mounted onto chip-mount surface 1 by a plurality of solder joints 5a-5d. An underfill resin 8 is provided between chip 7 and the mount surface 1, so as to surround and encapsulate the solder joints 5a-5d. See paragraph [0024].



The claims of the present invention are also significantly different than Iijima. The chip 7 of Iijima is a flip chip. With the Iijima flip chip, there is no molding cap. Rather, the chip is flipped and mounted directly onto a substrate using solder balls. An underfill material is then typically applied between the chip and substrate to protect the solder joints. No molding material is used to encapsulate the chip.

Since there is no molding cap in Iijima, there (i) are no tensile and/or sheer stresses caused by the molding cap; and (ii) can be no molding interface material. Iijima therefore fails to teach or suggest a molding interface material which is configured to control at least one of tensile and shear stresses experienced by the die and substantially caused by a molding cap.

DiStefano or Iijima, either alone or in combination, fail to teach or suggest the use of a molding interface material to control at least one of tensile and shear stresses experienced by the die and substantially caused by a molding cap. Since neither reference teaches the invention as claimed, the proposed combination cannot either.

In view of the above, it is respectfully requested that the Examiner withdraw the rejection of claims 1-16 and 37-40. It is respectfully submitted that all pending claims are allowable and that this case is now in condition for allowance. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below. If any fees are due in connection with the filing of this Amendment, the Commissioner is authorized to deduct such fees from the undersigned's Deposit Account No. 500388 (Order No. ALTRP100).

Respectfully submitted,
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